Résumé

Kopinjol Baishya
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Research Expertise

• Determining structural, electronic and optical properties of clusters and surfaces using *first-principles* techniques based on *density functional theory*, its time dependent extensions and *many-body perturbation* methods

• Debugging and analyzing massively parallel code running in the exascale and writing code in *Fortran 90*, *Fortran 77*, *C* and *Python* employing various numerical methods. Maintaining and building HPC clusters.

Thesis Title: First Principles Studies of Electronic and Optical Excitations in Noble Metal and Titania Clusters

Work Experience (Coding): Python3 (two years), Machine Language (two years).

Education

2005-2013	**Ph.D. in Physics** University of Illinois at Chicago, Chicago IL
2004	Joint CSIR-UGC National Eligibility Test (NET)
2001-2003	**M.Sc. in Physics** (*First Class with 67.0% of marks*) St. Stephen's College, University of Delhi, Delhi, India
1998-2001	**B.Sc. in Physics** (*First Class with 69.3% of marks*) St Stephen's College, University of Delhi, India
1998	**Higher Secondary Examination (science)** (*First Divison with 79.4% of marks*) Darrang College, Tezpur, ASSAM, INDIA
1996	**High School Leaving Certificate Examination** (*First Divison with 82.9% of marks*) Tezpur Government Higher Secondary School, ASSAM, INDIA

Research Experience

2010-2013	**Optical properties of nano-systems using** *many-body theories*, **UIC** Studies of optical properties of nano-systems including $Ti0_2$ nano-crystals, organic molecules for dye sensitized solar cells and transition metal atoms and ions.
2009-2010	**Optical properties of Cu clusters, UIC** Studies of optical properties of small to medium sized Cu clusters using *Time Dependent Density Functional Theory* and *GWBSE theory.*
2007-2009	**Optical properties of Ag clusters, UIC** Investigation of Optical properties of medium sized Ag clusters by *Time Dependent Density Functional Theory* and comparison with experiments.
2007-2007 Summer	**Ctalytic $Fe-xN$ sites on carbon nanotubes, Argonne National Laboratory,. IL** Investigation of the structure and energetics of $Fe-xN$ incorporated into carbon nanotubes and graphene using *FirstPrinciples* calculations

Publications

- "*Benchmarking the GW-Approximation and Bethe-Salpeter Equation for Groups IB and IIB Atoms and Monoxides,*" Linda Hung, Fabien Bruneval, Kopinjol Baishya, Serdar Ogut. Journal of Chemical Theory and Compiutation, **13**, 5 (2017)
- "*A First Principles Real Space study of Electronic and Optical excitations in Rutile TiO_2 Nanocrystals,*" Linda Hung, Kopinjol Baishya, Serdar Ogut, Phys. Rev. B **90**, 16524 (2014)
- "*First principles absorption spectra of Cu_n $(n = 2-20)$ clusters,*" Kopinjol Baishya, Juan C. Idrobo, Serdar Ogut, Mingli Yang, Koblar A. Jackson and Julius Jelinek, Phys. Rev. B **21629**, 245402 (2011)
- "*Catalytic Fe-xN sites in Carbon Nanotubes,*" Alexey Titov, Peter Zapol, Petr Kral, Di-Jia Liu, Hakim Iddir, Kopinjol Baishya, and Larry A. Curtiss, Journal of Physical Chemistry C, **113**, 52 (2009)
- "*Optical Absorption Spectra of intermediate-sized Ag clusters from First Principles,*" Kopinjol Baishya, Juan C. Idrobo, Serdar Ogut, Mingli Yang, Koblar A. Jackson and Julius Jelinek, Phys. Rev. B **78**, 075439 (2008)
- "*Brownian Motion: Theory and Experiment, A Classroom Measurement of the Diffusion Coefficient,*" Resonance, 8, 3 (2003)

Employment

2015-2022	**Assistant Professor,** Handique Girls' College, Guwahati, Assam. Teaching Higher-Secondary and Undergraduate Classes.
2013-2014	**Post Doctoral Fellow** Case Western Reserve University, Cleveland OH. Working on research projects on Perovskites and defects in solids using Liear Muffin-Tin Orbital Method.
2007-2013	**Research Assistant,** University of Illinoise at Chicago, IL Working on research projects mentioned above.
Summer 2007	**Research Assistant,** Argonne National Laboratory, Argonne, IL
2005-2013	**Teaching Assistant in Physics,** University of Illinois at Chicago, IL Assisted and instructed students in classroom and laboratory setting, graded lab reports, exams and homework, tutored undergraduate students.

Professional Memberships and Workshops/Schools

2009-2013	American Physical Society, member.
2011	"5^{th} *Time Dependent Density Functional Theory: Prospects and Applications,*" January 2012, Centro de ciensias de Benasque Pedro Pascula, Benasque, Spain.

References

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